

Introduction to Botany: BIOL 154

Lab 3. Plant communities: abundance and cover

September 19th, 2010

1 Assignment

1. Mark 1×1 m observation plot with measure tape, 4 wooden sticks and thread.
 2. Count numbers of plants from each of three groups: (a) grasses (Gramineae), (b) aster family (Compositae) and (c) all other families.
 3. Using Drude's and 1543 scales, describe total abundance of each group.
 4. Using canopy coverage scale, describe total coverage of each group.
 5. Which group has highest abundance? Why? Explain.
 6. Which group has highest coverage? Does this group has also highest abundance? Why? Explain.
 7. Do all teams have the same results? Why? Explain.
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2 Background:

2.1 How to distinguish families

1. Herbs/woody, sometimes with milky sap. Leaves variable, typically alternate/opposite, *without stipules*. Inflorescence an *involucrate head resembling the sole flower*. Flowers unisexual/bisexual, actinomorphic/zygomorphic. Calyx reduced to pappus/scales/rarely completely absent, petals $C_{(5 \text{ or } 3,2 \text{ or } 3)}$. Stamens A_5 , anthers united into a tube around the style. Fruit *small, solid and dry* (cypsela), usually with *long hairs on the top* (pappus). Widespread.
..... **Compositae**, or Asteraceae (two alternative names).
The largest family of dicotyledons, with about 1300 genera and 21 000 species. One hundred and eighty-one genera are native to Europe, 346 to North America. Many are grown as ornamentals, vegetables and flavorings.
- Plants have different characters 2.
2. Herbs/bamboos. Leaves *narrow, linear, alternate in 2 ranks, with sheath and ligules*; stems terete in section, internodes usually *hollow*. Flowers each compressed between a bract (lemma) and bracteole (palea, rarely absent), the unit forming a floret, these arranged in 2 ranks in spikelets subtended by 2/rarely 1 empty bracts (glumes); spikelets themselves *grouped in more complex inflorescences, usually spikes/racemes, or panicles*. Perianth represented by 2–3 scale-like lodicules (often very small), stamens A_3 or 2. Seed fused to pericarp to form a *one-seed dry fruit* caryopsis. Widespread.
..... **Gramineae**, or Poaceae (two alternative names).
Economically the most important family of flowering plants, with about 600 genera and 9000 species. One hundred and fifty-five genera are native to Europe and 231 to North America. Many are cultivated as ornamentals, and many for their edible grains, e.g. wheat (*Triticum*), oats (*Avena*), barley (*Hordeum*), millet (*Sorghum*), rice (*Oryza*), etc.
- Plant are not as above **All other families**.

2.2 Abundance scores

Drude's scale:

sol. — one;
sp. — few;
cop. — many;
soc. — copious.

Scale 1543:

0 — absent;
1 — one individual plant;
2 — no more than 12 individual plants;
3 — number of individuals is more than 12 but no more than 5% of total number of plants on a plot;
4 — number of individuals is more than 5% but no more than 25% of total number of plants on a plot;
5 — number of individuals is more than 25% but no more than 50% of total number of plants on a plot;
6 — number of individuals is more than 50% but no more than 75% of total number of plants on a plot;
7 — number of individuals is more than 75% of total number of plants on a plot.

2.3 Coverage scores

Canopy coverage is the area covered when an imaginary polygon is circumscribed about a plant's foliage and projected to a horizontal plane and expressed as a percentage of the sampling unit. The collective canopy coverage of all individuals of a species on a plot or stand is expressed as a percentage of the total area or as a coverage class.

CANOPY COVERAGE CLASS:

T = Rare to <1%	4 = 50 to <75%
1 = 1 to <5%	5 = 75 to <95%
2 = 5 to <25%	6 = 95 to 100%
3 = 25 to <50%	

2.4 Illustrations



Compositae (*left*) and grasses (*right*)